AUTOMATED LANE-DIVIDER BUTTON APPLYING MACHINE

BACKGROUND OF THE INVENTION

The invention relates to highway construction and repair machines, and more particularly to a self-propelled, fully automated machine for applying lane-divider buttons along lane-divider lines defining highway traffic lanes.

Lane-divider lines normally are employed in highway systems to define paths of travel for motorized vehicles. It has been the practice to delineate the lanes using lane-divider lines formed by applying parallel stripes or lines of paint of particular colors, which for recognition purposes, are of colors contrasting with the colors of the highway surfaces in order that lanes are clearly and readily discernible for aiding vehicle operators in maintaining vehicle control. However, the painted lines are not entirely satisfactory as they do not effectively obviate "wandering" such as that resulting from operator inattention or obscuration of the markings.

Numerous schemes have been devised, with varying degrees of success, for advising vehicle operators when vehicles "wander" from a delineated highway lane. One of the more practical recent innovations has been to define the highway lanes by applying readily apparent "strings" of lane-divider buttons along the surface of the highways.

In practice, a combination of two types of buttons are employed in defining the lanes. The first being circular and fabricated from ceramic materials, normally white in color, each having a diameter substantially equal to the width of a common lane-divider line, and so configured as to have a planar supporting surface and a domed upper surface. The second type is rectangular, preferably square, having a least one substantially vertical planar reflecting side surface and a width equal to the diameter of the circular buttons. Preferably, the circular buttons are strung in strings of four, on 3-foot centers, with the strings being spaced at 15-feet intervals to define lane-divider lines readily visible to vehicle operators. Midway between alternate strings of four circular buttons there are arranged the second type of buttons, each having its reflecting surface directed towards the oncoming traffic. Hence, the reflector surfaces of the rectangular buttons are interspersed with the strings of white buttons so that under conditions of poor visibility light from the head lamps of approaching vehicles may be gathered and directed back toward the operators for aiding the operators in visually observing the divider lines. Furthermore, in executing lane changes, vehicle operators necessarily "feel" the buttons as the wheels of the vehicle pass thereover so that the vehicle's position relative to the selected lane is determined by "feel" as well as by visual observation.

Use of these buttons, while effective, has been severely limited since heretofore it has been the practice to apply the buttons by hand. In manual applications, each of the areas which is to receive a button is first cleaned, through brushing or sand blasting operations to thereby enhance the button adhering characteristics of the surface, a "glob" of a convenient adhesive, such as epoxy, next is applied to the cleaned surface area and a selected button manually is deposited and seated in the glob of adhesive. As can readily be appreciated, manual application of the buttons proves to be excessively time-consuming and, in some instances economically prohibitive, even though the buttons have been quite effective in achieving a reduction of highway accidents.

SUMMARY AND OBJECTS OF THE INVENTION

This invention overcomes the aforementioned disadvantage in the use of lane-divider buttons by providing an economic fully automated, self-propelled machine for cleaning selected areas of the button receiving surface of the highway, depositing selected quantities of adhesive in the selected and cleaned areas and subsequently applying and seating lane-divider buttons in the deposited adhesive.

Accordingly, an object of the instant invention is to provide an automated lane-divider button applying machine.

Another object is to provide a lane-divider button applying machine particularly suited for use in applying divider buttons at selected intervals along lane-divider lines of surfaced highways.

Another object is to provide an automated lane-divider button applying machine adapted to be driven along surfaces of highways for depositing lane-divider buttons at preselected intervals in an adhesive which is applied substantially simultaneously therewith.

Another object is to provide a self-propelled and automated lane-divider button applying machine adapted to be propelled and steered along lane-divider lines of surfaced highways for cleaning selected areas of the surfaces of the highway, mixing and depositing an adhesive in cleaned areas, depositing lane-divider buttons in the applied adhesive and positively seating the deposited buttons.

Another object is to provide an automated self-propelled and steerable lane-divider button applying machine adapted to be propelled and steered along a lane-divivider for cleaning selected surface areas at predetermined intervals, applying an adhesive at the cleaned areas, applying highway buttons of alternate configurations within the applied adhesive and seating the applied buttons.

Another object is to provide in a lane-divider button applying machine a button magazine adapted sequentially to deliver the buttons in series and at predetermined intervals to be deposited in applied adhesive.

Another object of the instant invention is to provide in an automated lane-divider button applying machine means for orienting the buttons as they are delivered to be applied by the machine.

Another object is to provide for an automated lane-divider button applying machine and adhesive applicator particularly suited for use in depositing globs of adhesive at preselected intervals along the surface of the highway.

Another object is to provide for an automated lane-divider button applying machine and a button ejector adapted to deliver buttons from the machine to a button receiving surface at selected intervals.

Another object of the instant invention is to provide for a lane-divider button applying machine a surface cleaning mechanism adapted to clean selected areas of the highway at predetermined intervals as the machine is advanced therealong.

Another object is to provide for a lane-divider button applying machine a guide boom connected with the surface cleaning apparatus for dictating the machine's direction of travel and the lateral displacement imposed on the machine's cleaning mechanism as the machine is advanced along the surface of a highway.

Another object is to provide a timing mechanism for sequentially controlling the simultaneously performed operations of a lane-divider button applying machine, whereby the button applying machine is caused to clean the surface of the highway, at varied intervals, deposit adhesive thereon and selectively deposit selected lane-divider buttons within the applied adhesive.

These together with other objects and advantages will become more readily apparent by reference to the following description in light of the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side view of the automated lane-divider button applying machine embodying the principles of the present invention.

FIG. 2 is a diagrammatic view of a preferred arrangement for strings of lane-divider buttons applied by the machine of FIG. 1.

FIG. 3 is a plan view of the machine of FIG. 1.